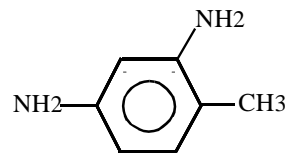


DIAMINOTOLUENE (MIXED ISOMERS)

CAS Registry Number: See table below

Molecular Formula: C₇H₁₀N₂



2,4-Diaminotoluene

There are four isomers of diaminotoluene. They are 2,4-; 2,5-; 2,6-; and 3,4-diaminotoluene (HSDB 1993). There is a separate fact sheet for 2,4-diaminotoluene. It is listed as 2,4-toluene diamine. Information on the other three isomers in this summary sheet is limited because little information is available.

Physical Properties of Diaminotoluene Isomers

	<u>Molecular Wt.</u>	<u>Melting Pt.</u>	<u>Boiling Pt.</u>	<u>CAS Number</u>
3,4-Diaminotoluene	122.17	89 °C		496-72-0
2,5-Diaminotoluene	122.17	64 °C	273 - 274 °C	95-70-5
2,6-Diaminotoluene	122.17	106 °C		823-40-5

(Howard, 1990; HSDB, 1993)

SOURCES AND EMISSIONS

Refer to the fact sheet on 2,4-toluene diamine for information on sources and emissions.

AMBIENT CONCENTRATIONS

No Air Resources Board data exist for ambient measurements of diaminotoluene isomers.

INDOOR SOURCES AND CONCENTRATIONS

No information about the indoor sources and concentrations of diaminotoluene isomers was found in the readily-available literature.

ATMOSPHERIC PERSISTENCE

Based on the experimental study of Becker et al. (1988), 2,4- and 2,6-toluenediamine will exist in the atmosphere in the gas phase. These two isomers have been shown to react rapidly with the OH radical. The calculated half-lives and lifetimes of 2,4- and 2,6-toluenediamine due to reaction with the OH radical are less than 3 hours and 4 hours, respectively. The other two isomers (3,4- and 2,5-toluenediamine) are expected to have similar reactivities towards the OH radical and hence similar half-lives and lifetimes (Atkinson, 1995).

AB 2588 RISK ASSESSMENT INFORMATION

Since no emissions of diaminotoluene from stationary sources in California have been reported under the AB 2588 program, it was not listed in any of the risk assessments reviewed by the Office of Environmental Health Hazard Assessment.

HEALTH EFFECTS

Probable routes of human exposure to diaminotoluene are inhalation, ingestion, and dermal contact.

Non-Cancer: 2,4-Diaminotoluene is a potent skin irritant and sensitizer. Local skin reactions may include dermatitis and urticaria. Contact with the eyes can cause lacrimation, ophthalmia, and blindness. Systemic effects may include asthma, gastritis, elevated blood pressure, tremors, convulsions and coma. There are no chronic inhalation data for this compound in laboratory animals or from human epidemiology studies. The United States Environmental Protection Agency (U.S. EPA) has determined that available data are inadequate to calculate a Reference Concentration (RfC), and has not established an oral Reference Dose (RfD) (U.S. EPA, 1994a).

Chronic exposures of laboratory rats to 250-4,000 parts per million of 2,4-diaminotoluene in the diet for 15 months showed a variety of systemic effects including mortality, testicular atrophy, decreased body weights, and changes in serum chemistry profiles in addition to the presence of tumors (HSDB, 1995).

Cancer: No information is available regarding the carcinogenic effects of 2,4-diaminotoluene in humans. The U.S. EPA has classified 2,4-Diaminotoluene in Group B2: Probable human carcinogen (U.S. EPA, 1994a). The International Agency for Research on Cancer has classified 2,4-diaminotoluene in Group 2B: Possible human carcinogen, and 2,5-diaminotoluene in Group 3: Not classifiable as to human carcinogenicity (IARC, 1987a).

The State of California has identified diaminotoluenes (mixed) and 2,4-diaminotoluene as carcinogens under Proposition 65 (CCR, 1996). The inhalation potency factor that has been used as a basis for regulatory action in California is 1.1×10^{-3} (microgram per cubic meter)⁻¹ for 2,4-diaminotoluene (OEHHA, 1994). In other words, the potential excess cancer risk for a person exposed over a lifetime to 1 microgram per cubic meter of 2,4-diaminotoluene is estimated to be no greater than 1,100 in 1 million. The oral potency factor that has been used as a basis for regulatory action in California is 4.0 (milligram per kilogram per day)⁻¹ for 2,4-diaminotoluene (OEHHA, 1994).